

## Physics

### Physics 2

#### IDENTIFICATION

CODE : PC-S2-PH-E  
ECTS : 6.0

#### HOURS

Lectures : 14.0 h  
Seminars : 39.0 h  
Laboratory : 21.0 h  
Project : 0.0 h  
Teacher-student  
contact : 74.0 h  
Personal work : 76.0 h  
Total : 150.0 h

#### ASSESSMENT METHOD

Continuous assessment all along the school semester to check acquired knowledge and skills by tests and practical exams.

A final exam will be held at the end of the school semester to evaluate the ability to analyze and solve a problem using the knowledge and skills acquired.

#### TEACHING AIDS

Textbooks with lecture notes, exercises and problems for tutorials and practicals wordings.

Multiple-choice questionnaire for autonomous training and self-assessment are available (French only).

#### TEACHING LANGUAGE

French

#### CONTACT

MME CASANOVA Sophie  
sophie.casanova@insa-lyon.fr  
M. GAUTIER Brice  
brice.gautier@insa-lyon.fr  
M. LEGUAY Pierre-Marie  
pierre-marie.leguay@insa-lyon.fr  
M. RULLIERE Romuald  
romuald.rulliere@insa-lyon.fr

#### AIMS

To gain an understanding and to master a lasting knowledge in different areas of Physics [Mechanics and Electromagnetism], thanks to reflection and to critical mind. This comprehensive knowledge is essential to take the 2nd year courses and to an engineer education.

To develop a scientific approach to solve theoretical and experimental problems, by implementing a multiple stage approach [observation, questioning, analysis of the problem, experimentation, modelling, interpretation, critical analysis].

The main skills aimed by this teaching are:

C11 - To split up a problem or a system into its component parts in interaction; C12 - To reduce a system or a problem by assumptions (hypothesis); C13 - To model a system or a problem by convenient dimensions or objects in relation; C14 - To build a scheme of the system or the problem; C16 - To build a proof; C21 - To compute by graphical resolution an exact or approximate solution; C24 - To implement scenarios to verify results coming from modelization; C32 - To acquire experimental data by identifying and evaluating acquisition limits; C51 - To select and implement well-adapted tools to represent and analyse data; C54 - To interpret data in the context of a model

#### CONTENT

- AC electricity
- Dynamics [of point and solid]
- Mechanical and electrical oscillations

#### BIBLIOGRAPHY

All physics books written for first undergraduate cycle.

#### PRE-REQUISITE

Notions learnt during secondary education: calculus, plane geometry, and trigonometric functions, calculation skills [derivatives, anti-derivatives, complex numbers, quadratic equations, systems of linear equations, trigonometry, vectors], statistics [average and standard deviation], data and functions plots.

The physics and maths curriculum of the first semester [dimensions, uncertainties and electricity + algebraic and differential equations]

This teaching will also use the mathematical tools and skills that will be learnt all along the school year.

#### INSA LYON

##### Campus LyonTech La Doua

20, avenue Albert Einstein - 69621 Villeurbanne cedex - France  
Phone +33 (0)4 72 43 83 83 - Fax +33 (0)4 72 43 85 00

[www.insa-lyon.fr](http://www.insa-lyon.fr)